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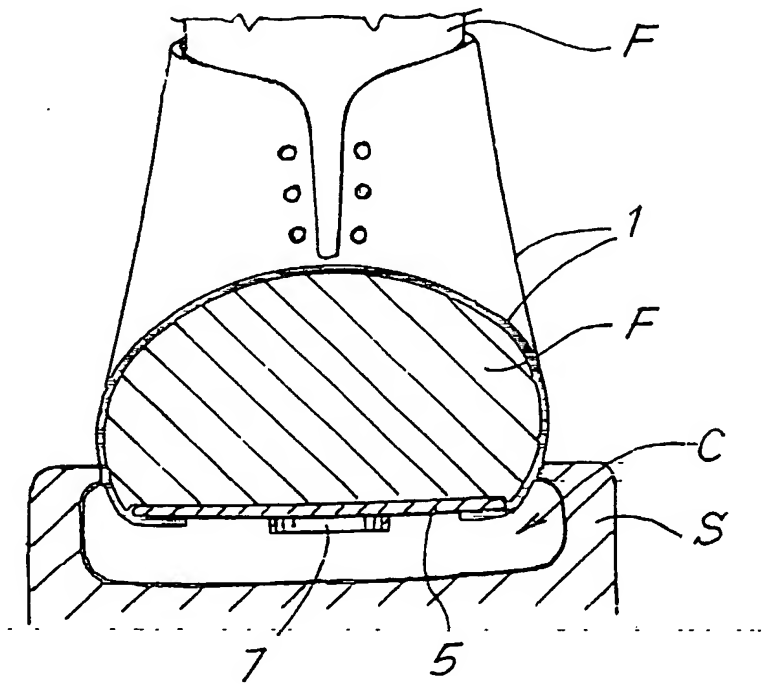
(54) Title: SAFETY SHOES, PROTECTIVE SHOES, WORKING SHOES FOR PROFESSIONAL USE, EQUIPPED TO ALLOW IDENTIFICATION AND TO MEMORIZE OTHER DATA



(57) Abstract: Personal protective equipment (PPE) such as safety, protective or working shoe for professional use and the like equipped with a transponder designed to identify the item, with memorization of the number or name of the article, the class and/or other peculiar characteristics, the size, the color, the date of manufacture and any other data and also if need be to monitor the data relative to its being placed in use, treatments performed and other events, and also to allow identification of the user, said transponder being designed to supply the data to a reading and processing and/or reporting means, through a univocal code contained in the transponder (7).

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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

SAFETY SHOES PROTECTIVE SHOES WORKING SHOES FOR PROFESSIONAL USE EQUIPPED TO ALLOW IDENTIFICATION AND TO MEMORIZE OTHER DATA

DESCRIPTION

Safety, protective and working shoes for professional use becomes dirty through use and moreover its performance tends to decrease due to treatments performed such as washing, sterilization, wear and the like.

In the case of shoes for professional use a certain number must be collected, to perform treatment such as washing, sterilization or other treatment cumulatively and simultaneously, and therefore they must be returned to the individual owners and/or users.

The invention above all relates to the incorporation of a transponder in the shoe, to allow identification that is certain, rapid and automatic by means of specific readers designed to receive data from the transponder.

The invention also allows – by means of the transponder – each shoe to be given a certain number of data or in any case these data to be associated by means of a univocal code contained in the transponder. This makes it possible to identify who they belong to, the time they have been in use, the number and type of treatments performed and as a function of these the state of preservation and/or remaining performance to avoid exceeding the limits beyond which the performance that the shoe is required to provide may be impaired.

The invention makes it possible to implement checks and identifications, even with substantially automated operations, facilitating both management of treatments and safety of checks.

The invention makes it possible to identify the class and/or peculiar characteristics of each item and to verify its consistency in the case of access to specific work areas (highly dangerous areas, clean rooms, etc.) and, by means of specific apparatus, to allow access or not, or in any case to detect and/or report the ascertained deficiencies.

To obtain the above, each shoe or pair of shoes is equipped with a transponder which is incorporated such as to make loss and/or replacement reasonably difficult and/or easy to identify. The transponder is capable of monitoring the data relative to the shoe, who it belongs to and if necessary also the number and the type of treatments performed and any other information of interest concerning the item in

which the transponder is incorporated.

In the specific case of safety shoes, protective shoes and working shoes for professional use, this comprises a transponder which may be incorporated in the sole or in other parts of the shoe, during manufacture, or – by providing specific housings – in a subsequent phase.

It may also be possible to re-use the same personalized transponder, to be used subsequently by the user by inserting it in shoes used subsequently to replace worn shoes.

In an advantageous embodiment, the transponder may contain a univocal code, by means of which the information mentioned above may be associated by means of a data processing system, designed to dialog with the transponders.

Another object of the invention is a process that is particularly suitable to produce safety, protective and working shoes for professional use, with the injection and/or molding system of the bottom that today represents the most widely used system in the production of shoes.

In the process – which entails producing the bottom by injection into a mould in which a last is position on which the upper and relative insole are fitted – a transponder is positioned in the mould prior to injection and/or introduction of the plastic material to form the sole; therefore said transponder is incorporated in the actual sole. In practice, said transponder may be made to adhere to the exposed surface of the insole, mounted on the last, before this is positioned in the mould.

It being stated that the position of the transponder may differ from the one indicated in the example hereunder, the invention shall now be better understood by following the description and accompanying drawing, which shows a non-limiting practical embodiment of the invention, relating to a safety, protective and working shoe for professional use. In the drawing:

Fig. 1 summarily shows, in a cross-section, a shoe equipped with transponder according to the invention;

Fig. 2 shows in a cross-section a last with upper and insole combined with a mould for injection and/or molding of the sole or bottom of the shoe.

According to what is illustrated in the drawing, 1 indicates the upper of the shoe and 3 indicates the sole or bottom of the shoe; 5 indicates the insole that completes the shoe.

According to the invention, a transponder 7 is combined with the shoe, and particularly with the sole or bottom of this shoe; this transponder in practice is positioned between the sole 3 and the insole 5, being more or less incorporated in the sole produced with the injection and/or molding system.

The transponder may be combined with the shoe in any suitable way, also by combining the insole 5 with the pre-constructed sole 3, producing in the sole 3 a seat designed to house the transponder 7. Said seat may be produced in any way, at the side or on the top or in other positions of the sole.

When – as in the majority of cases – production of a shoe of the aforesaid type is performed by directly molding the sole onto the upper 1 and the insole 5, mounted on a last, this molding operation may also be used to incorporate the transponder.

Fig. 2 shows a last F – on which the structure formed of the upper 1 and the insole 5 has been fitted –according to a known technique said last being combined with a mould S shown summarily, which is provided with a cavity C that is delimited by the assembly of the last with the parts combined on it, so that it closes the cavity C. It is thus possible to inject thermoplastic resin to form the sole, which is modeled according to the shape of the cavity C completed by the structure of the last F and the parts applied to it.

To incorporate the transponder 7, this may be simply applied to the exposed surface of the insole 5 of the assembly 1, 5 mounted on the last F. Therefore the transponder 7 is located in the cavity C which will be filled with injected thermoplastic resin. The transponder 7 will in this way be incorporated in the resin and thus in the sole produced. Therefore, combination of the transponder with the shoe takes place with an extremely simple operation, equivalent to traditional operations to produce safety, protective and working shoes for professional use, like the one defined above with the sole molded on the last equipped with upper and insole; the only additional operation is the operation to position the transponder against the insole before positioning the last against the mould.

It is understood that the drawing only shows an example, provided purely as a practical illustration of the invention, and that said invention may vary in forms and arrangements without however departing from the scope of the concept forming the invention.

The invention also provides that the transponder may be combined with the

shoe by positioning it in the upper or in accessory parts of it, in a specific housing.

In some cases safety, protective or working shoes may be implemented with the transponder positioned in such a way that it can be recovered and re-used.

CLAIMS

1) A safety, protective and working shoe for professional use or the like, characterized in that it is provided with a transponder designed to supply data to allow identification of said shoe, with memorization of the number/name of the article, the size, the color, the safety class and/or other characteristics, the date of manufacture or any other data and also to allow monitoring of the data relative to placing it in use, treatments performed and other events, and also to allow identification of the user or designed to associate said data by means of a univocal code contained in said transponder.

2) Shoe as claimed in claim 1, characterized in that said transponder is incorporated in the device so as to make any loss and/or replacement reasonably difficult and/or easy to identify.

3) Shoe as claimed in claim 1, characterized in that said transponder is positioned in such a way that it may be recovered and re-used.

4) Shoe as claimed in claim 1, characterized in that said transponder allows identification of the class and/or the peculiar characteristics and verification of its consistency in the case of access to specific working areas.

5) Shoe as claimed in claim 1 or 2, characterized in that said transponder is designed to allow identification of the user, so as to guarantee recovery after cumulative treatments of a plurality of said shoes, such as washing, sterilization and other types of treatments.

6) Shoe as claimed in at least one of the previous claims, characterized in that said transponder is incorporated in the bottom of the shoe.

7) Shoe as claimed in at least one of the claims from 1 to 5, characterized in that the transponder is inserted between the insole and the sole of the shoe.

8) Shoe as claimed in at least one of the claims from 1 to 5, characterized in that the transponder is inserted in the upper or accessory parts of the upper in a specific housing.

9) Process to produce a shoe as claimed in at least one of the previous claims, including the production of the bottom by injecting thermoplastic resin into a mould in which a last complete with upper and insole is positioned, characterized in that the transponder is positioned in the mould before injection of the material to form the bottom, so that said transponder is incorporated in the molded sole.

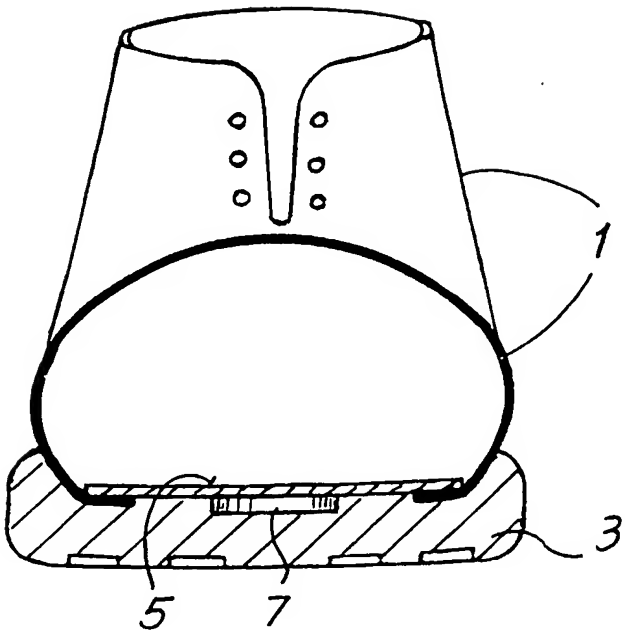

Fig.1

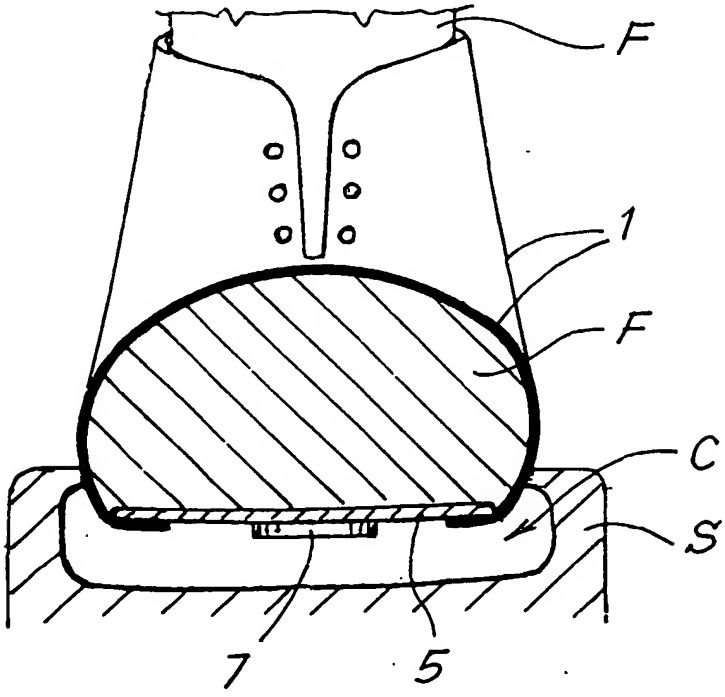

Fig.2

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A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A43B7/32 A43B3/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 A43B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	PATENT ABSTRACTS OF JAPAN vol. 1999, no. 03, 31 March 1999 (1999-03-31) & JP 10 320603 A (OHBAYASHI CORP), 4 December 1998 (1998-12-04) abstract ---	1,9
A	DE 299 16 238 U (K & T HANDELS U UNTERNEHMENSBE) 5 January 2000 (2000-01-05) the whole document ---	1,9
A	FR 2 800 245 A (GEMPLUS CARD INT) 4 May 2001 (2001-05-04) the whole document ---	1,9
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[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

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'A' document defining the general state of the art which is not considered to be of particular relevance

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'T' later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

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'&' document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
31 October 2003	07/11/2003

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Claudel, B

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	PATENT ABSTRACTS OF JAPAN vol. 014, no. 419 (P-1103), 10 September 1990 (1990-09-10) & JP 02 161561 A (HITACHI MAXELL LTD), 21 June 1990 (1990-06-21) abstract -----	1,9

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